

# **Getting Energized**

## **Assessments**

# GETTING ENERGIZED

## STUDENT ASSESSMENTS

The following assessments are designed to be used at the end of the renewable energy activity unit. However, these activities are provided as *guidelines* for the teacher to use in developing appropriate measurement packages. Assessments can range from daily, weekly or final activities; they may be oral, written, multiple-choice, true-false, task-oriented, cumulative, diagnostic, etc. Please use these ideas and add or delete according to your needs.

A sample rubric is included on page 85. Again, it is important for teachers to adapt scoring guides to suit the needs of their students.

On page 86, a “pledge certificate” also has been included. NREL encourages teachers to promote the continuation of energy saving practices by their students.

## **GETTING ENERGIZED STUDENT ASSESSMENTS**

### **ASSESSMENT #1**

#### **QUIZ: ENERGY - WHAT IN THE WORLD IS IT?**

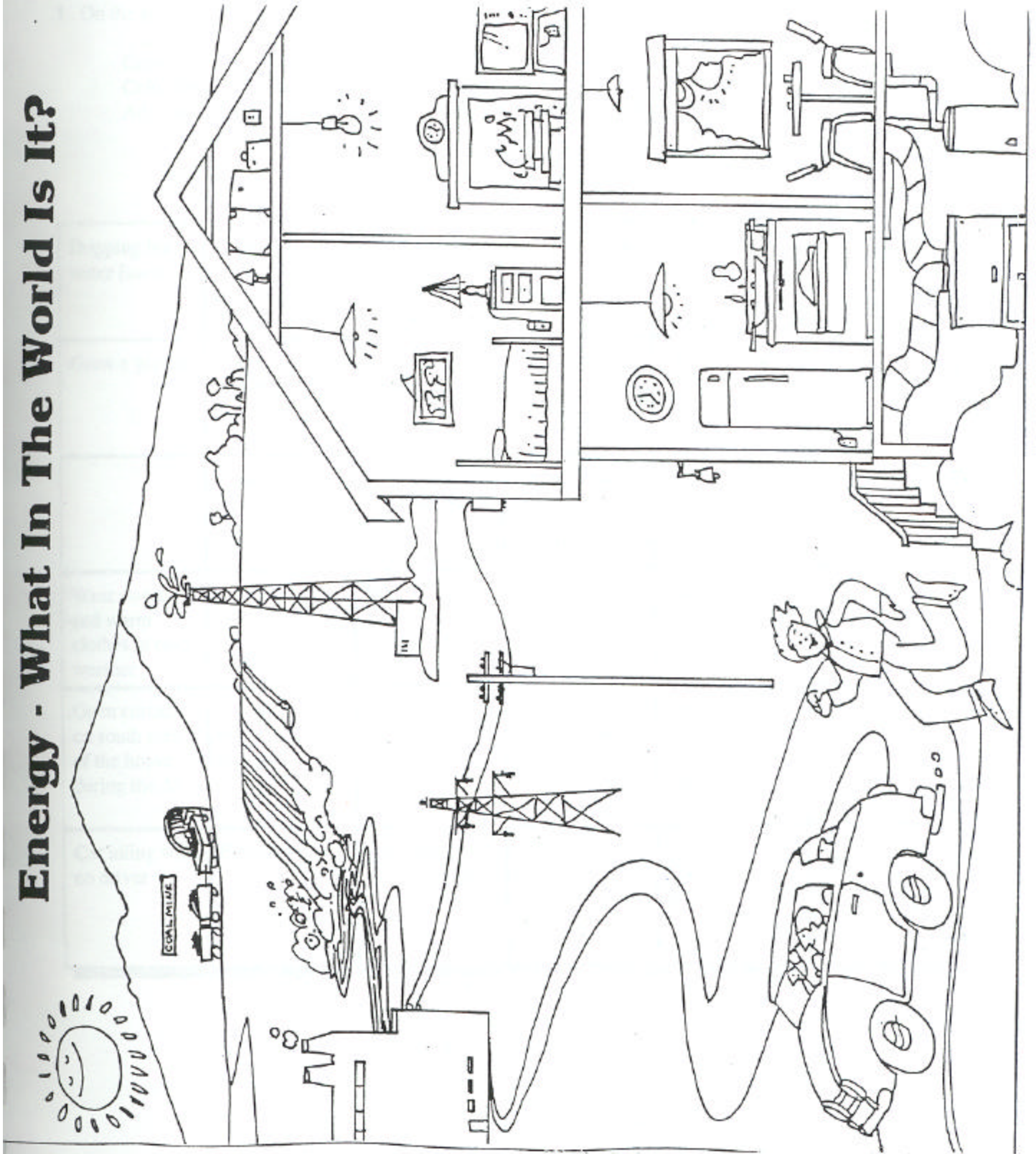
1. Students have learned about various energy sources. Additionally they have learned to distinguish nonrenewable and renewable energy sources. They have learned that one form of energy can be transformed into another form. They have learned that energy is the power to make things move; energy creates light; and energy makes heat. Energy is the ability to do work.

Have students color the picture using the following key:

Color the source of all energy (the appropriate color).

- a. Color GREEN the things that move
- b. Color YELLOW the things that light.
- c. Color RED the things that give off heat.
- d. Put a BLUE CIRCLE around all renewable energy sources.
- e. Put a BROWN CIRCLE around all nonrenewable energy sources.
- f. Put a PURPLE "F" where food energy is being transformed into the energy to run.
- g. Put a BLACK "G" where the energy in gasoline is causing the object to move.
- h. Color ORANGE where taking the energy source causes landscape changes.
- I. Mark three places with "EE" where electrical energy is being converted into light energy.
- j. Put an "N" where natural gas energy is being changed into heat energy.

# Energy - What In The World Is It?



## ASSESSMENT #2

### CONSERVATION QUIZ

1. On the grid below, have students color boxes according to the following guidelines.

Color the blocks RED which show a waste of energy.

Color the blocks YELLOW which show saving energy.

Add ideas of your own to the empty boxes and color them correctly.

Dripping hot water faucet	Room with thermostat set at 68°F or lower		Lights on in an empty room	Car making a quick stop or start	
Grow a garden	Electric blanket	TV off when no one is watching		Car pool	Electric can opener
	Fluorescent lights	Lamps with 150 watt bulbs	Car with only one passenger		Take showers instead of baths
Wear sweaters and warm clothes in cold weather		Ride your bike instead of taking the car	Electric toothbrush	Cars speeding over 55 mph	Outside lights left on during the day
Open curtains on south side of the house during the day	Full loads in the washing machine		Use both sides of a piece of paper	Close windows and doors with heat or air conditioner on	
Car idling with no driver	Electric knife	Hang clothes outside to dry		Recycle paper, glass and metal	

### ASSESSMENT #3

#### QUIZ: WHO'S THE COOLEST?

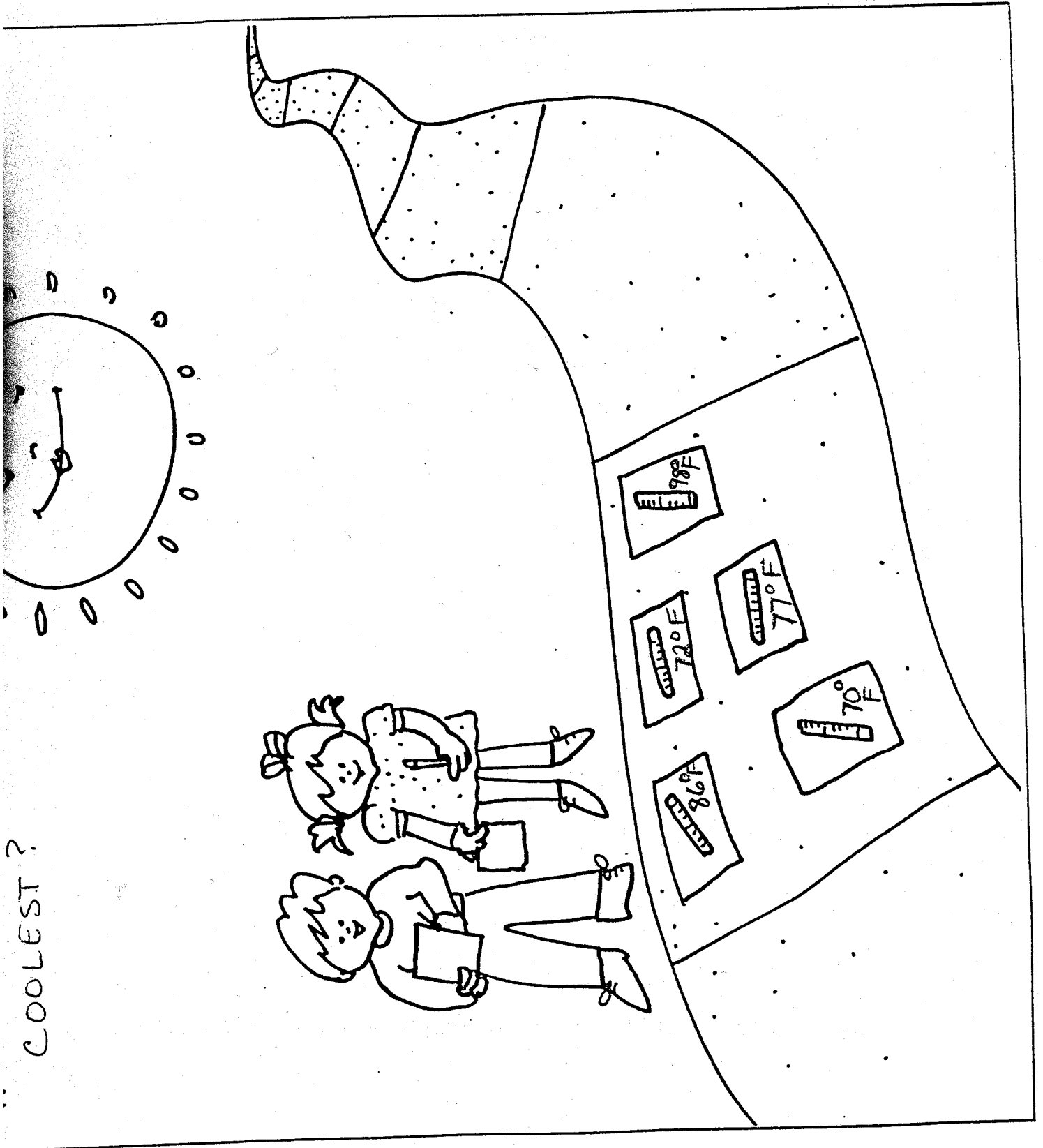
1. Give each student the picture and some crayons.
2. Explain that the picture is an experiment. The squares on the sidewalk are pieces of construction paper of different colors. The thermometers have been sitting on each one for 15 minutes in the hot sun. The two students have recorded the temperature on each square of paper. Using this information, color the squares according to this key:

2 squares are white  
1 square is black  
1 square is yellow  
1 square is blue

**OR**

#### TASK: WHO'S THE COOLEST?

1. Use this as an experiment your students can do. Pick a sunny day!
2. Ask students to answer: WHICH COLOR WILL STAY THE COOLEST?
3. Give each student a thermometer. Have them work in groups of 3-5.
4. Let them choose 3-5 colors of construction paper to test for their group. [Paper can be cut to one size, i.e., 4" x 5" or you can purposely give them different sizes. See #6 below.]
5. Hand out the Task Lab Sheet. Students must complete all parts including the graph and conclusion.
6. Explain that this is a **controlled experiment** where one variable is manipulated while all other variables are controlled or kept the same. [For example, the color of the construction paper is a variable that will be manipulated whereas location, time of day, amount of sun, size of paper, orientation of paper, type of thermometer, etc. are all kept the same.]
7. Conclusions should identify the lighter colored paper as being the coolest.



COOLEST?

**Name** \_\_\_\_\_

## TASK: LAB SHEET


TITLE: \_\_\_\_\_

PURPOSE: TO FIND OUT “WHICH COLOR WILL STAY THE COOLEST?”

HYPOTHESIS: I THINK \_\_\_\_\_

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## DATA TABLE



### Graph and Conclusion (over)



## GRAPH


0

Time

CONCLUSION:

THE COOLEST COLOR IS \_\_\_\_\_

BECAUSE \_\_\_\_\_

\_\_\_\_\_.

## **ASSESSMENT #4**

### **TASK: KEEP IT COOL**

1. Challenge students to design an insulation system that will keep an ice cube for 2 hours.
2. Students can try Styrofoam®, black cloth, white cloth, yellow wrapping paper, packing peanuts, newspaper, paper towel, tape, aluminum foil, etc. The insulated ice cube will then be placed in a plastic cup with the student's name on it and left for 2 hours in a place *chosen by the teacher*.
3. Controlled experiment: Students will vary the kind and amount of insulation. The teacher will control the size of ice cube (1 per student--try to get them the same size), size of cups (from Activity #12), location of cups, and length of time (2 hours).
4. Bring in a measure up or teaspoons to record the amount of water in the plastic cup after 2 hours. Share the results with the class--however, no names need to be used. Indicate each cup by a number followed by the amount of water that melted.
5. Students need to complete the accompanying lab form.

Name \_\_\_\_\_

### LAB: KEEP IT COOL

PURPOSE: TO FIND OUT WHAT MAKES THE BEST INSULATOR

HYPOTHESIS: I THINK \_\_\_\_\_

\_\_\_\_\_

DATA TABLE

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CONCLUSION:

IN MY EXPERIMENT, \_\_\_\_\_ TEASPOONS OF WATER MELTED.

THE BEST KIND OF INSULATION WAS \_\_\_\_\_

\_\_\_\_\_ BECAUSE \_\_\_\_\_

\_\_\_\_\_

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# **Rubric for Task Assessments**

## **Getting Energized**

### **Activities for Elementary Grades 3-6**

#### **General Scale for Scoring Student Performance**

<b>SCORE</b>	<b>DESCRIPTION</b>
5	Beyond expectations--quality of work is unusually high and beyond expectations
4	Meets expectation--skill is mastered to the level of expectation
3	Almost there--skill is almost mastered but with minor problems
2	The skill is present but with errors and omissions
1	The skill is absent

**I, \_\_\_\_\_**  
**do solemnly pledge to**  
**conserve\_\_\_\_\_**  
**by\_\_\_\_\_**

\_\_\_\_\_  
\_\_\_\_\_  
**starting on this\_\_ day of 19\_\_\_\_\_.**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Witness**